

AN EMPIRICAL STUDY ON THE COMMUTERS SATISFACTION TOWARDS SERVICE QUALITY DIMENSION WITH REFERENCE TO CHENNAI METRO RAIL LIMITED

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ABSTRACT

Commuters are the strength of any transport business which is to be preserved sensibly. All the members including CMRL (Chennai Metro Rail Limited) must be involved in providing quality services to the commuters which leads to commuter satisfaction and retention. Commuters are one of the participants of the business. In a modest scenario commuter's satisfaction becomes a top priority. The CMRL must regularly monitor and should improve the quality of services to provide better commuter's satisfaction. It is very much crucial for CMRL to find the factors which influence commuter's satisfaction and should endlessly monitor and nurture them. The research data is collected through a planned questionnaire with a sample size of 220 respondents. It helps to find out the factors related to Chennai Metro Rail Limited services which have an impact on commuter's satisfaction

KEYWORDS: Chennai Metro Rail, Commuter's Satisfaction & Service Quality

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INTRODUCTION

Transportation initiates an imperative role in the progress of a nation and is a device of societal and ethnic life of its citizens. The eminence of people in a state concerning Edification, Occupation and Well-being get affected by the prevailing transportation system. So any city needs to have an effective public transportation system and the same has to be accomplished to face approaching future challenges and to safeguard efficacy in their operations. The indication of the Chennai Metro wants the credentials of the changes brought out by it in the transport sector of the economy. Most prominently, Chennai metro adds to the diversion of a very high percentage of present-day passenger traffic from road to Metro and serves part of the increasing passenger traffic demand in Chennai. Accordingly, there will be a decrease in the number of buses, passenger cars and other vehicles carrying passengers on Chennai roads with the introduction of the Metro.

The Chennai suburban railway linkage from the beach to Tambaram started in the year 1930 as a meter gauge operation. Due to the growth in population the need for transportation arose and in the year 1935 services from Chennai Central to Arrakonam and Gummidipoondi started from Moore market complex. As a progress in 1997 the advanced system of transportation from Chennai beach to Thirumayilai as over bridge rail transportation for the convenience of the commuters which was extended to Velachery from the year 2007.

On need-based, the recent service of metro rail system came into plan and action from the year 2015. The project was carried out as a mutual scheme for the welfare of the passengers between the Government of India and

the Government of Tamil Nadu. The metro system was planned both as a tunnel and elevated station, as it would not disturb the regular on-road traffic.

NEED FOR THE STUDY

The Present study tries to determine the commuters satisfaction level of CMRL users as well as the service quality of CMRL. The highly focused on aspects like bird's Eye view on cleanliness any hygiene factor, equipment of infrastructure, the safety aspect of passenger, accessibility, convenient and comparability associated with the service. It also focused on Amenities of Cleanliness, Proper maintenance of Coaches, Availability of Ladies coach and facilities for a physically challenged person. It also tries to cover the challenges found by the CMRL. Passengers. Like proper train information, Delay of the train, cancellation of trains, Shorting out of mobile problems the present study tries to bring out the aspect of a passenger.

Significance of the Study

This study contributes to enhancing the service quality of CMRL and identifying the new dimension of improving customer satisfaction. New schemes like low fair Autorikshaws and Tempo travel to long distances have innovative ways to customer satisfaction. Apart from this Eco-friendly services like cycle to a passenger for near-by places also enhance service quality.

STATEMENT OF THE PROBLEM

It is necessary to study a commuter's experience about the services, technology and processes of transportation in Chennai city. As transportation and its service plays an important role in the development of the country. It is necessary to take imminent actions for the improvement of the present transport service system. Due to the fast growth in education, employment, health and accommodation it has become mandatory that the modern commuting system had to take a great turn up. Having this problem in mind the study of the quality of the CMRL services given towards the passengers up to their level of satisfaction becomes the need to study about the service quality rendered to the commuters of CMRL.

OBJECTIVES OF THE STUDY

- To explore the demographic factors of CMRL Commuters
- To measure the service rendered by the CMRL to the Commuter.
- To identify the infrastructures available to the commuters of CMRL.
- To offer suggestions to improve the satisfaction of commuters of the CMRL.

Hypotheses of the study

- There is no significance in the value of service given by the CMRL to the Commuters.
- There is also no significant difference in the infrastructures available to the commuters of CMRL.

RESEARCH METHODOLOGY

The investigative and analytical study is based on the Survey method for further findings and suggestions. It is highly reliable Primary data obtained from CMRL users at various part of Chennai through well-developed questionnaire. Apart

from this a part of secondary data and related information were collected from a number of book, magazine, Publications, Newspaper, Periodicals and Previous research works.

Data Collection Method

Through questionnaires and direct interviews with the commuters form the primary data for the present study.

Sample Size & Sample Design

The Primary data were collected through a convenient random sampling method. A well-designed questionnaire has distributed among CMRL users at various Metro Stations. 300copies of the questionnaire were distributed and 250 filled were received back. Only 220 questionnaire were taken for the study rest 30 were rejected due to their values and unfilled aspect. The period of the study was from 2018 to 2019. Questionnaire Design & Scaling Pattern been divided into the questionnaire has /their sections which were used for data collection from CMRL users.

Limitations of the Study

- Time & reasons are limited to carry on the research.
- The sample is limited to 220 which is lower to population.
- The respondents are more cautious in revealing their personal details Monthly Income, Occupation. So the accuracy of data can't be made.
- The Data collected in transit so the respondents were not able to respond to the questions in fullest.

Statistical Techniques

Factor Analysis is exploited to find the impact of service quality dimensions (SQD) variables.

Multiple Regression is used to determine the influence of personal profile and service quality dimension factors on overall commuters satisfaction aspect.

REVIEW OF LITERATURE

Elangovan, Senthil Kumar CB & Nallusamy (2017) in the existing situation due to machine life and contemporary development, commuters are more reliant on the latest steering system of metro rail. Such a system works well to prepare their routine and helps them to reach their terminus on time. In this study, an attempt was made to focus on the future of Chennai metro rail limited and its future development along with the parallel growth of metros that boost people's lifestyle at metros. The factors that support Chennai metro rail limited project are addressed with the overall impact of it for an area grows with before and after the impact of the projects. This research article also addressed the innovative growth of area about how nearby areas are deeply enjoying the impact of such a project by knowing the overall outcome of the project. The development of the project is also addressed with all the necessary growth factors which support the lifestyle of the general public.

Vivek Kumar and Vikas Rastogi (2014) reveal metro conveyance is one of the major means of transportation, so it must offer high well-being level for the commuters and the staff. However, the cosiness that commuters experience is a highly complex and individual phenomenon. The enhancement of passenger comfort while travelling has been the subject of a strong interest in metro train services providers. They also summarized Metro City Railway services need to be

rationalized to provide world-class passenger amenities and services to the large crowd of passengers using these stations.

Sudin Bag (2012) has narrated that the maximum number of the respondents avail the metro services for getting the final destination, so it should be a prerequisite smoother and better system of ticketing and data regarding the arrival and departure of the train. It is also important to improve the excellence of security at the time of the journey to lessen pickpocket and others.

Som Sankar Sen (2012) in their paper “Kolkata Metro Railway and Commuters Fulfilment: An Empirical Study” concluded that in today’s modest state customer fulfilment is the first sign. For this, the commercial is to meet the anticipation of its customers. The organization should aim not only at satisfying the commuters but also focus on the relishing them. Thus it has become prerequisites for an organization to recognize the factors that distress commuter’s satisfaction level and determinedly measure them to try and bring about the required changes based on commuters insight and necessities.

ANALYSIS

Latent Dominant Dimensions of Service Quality Dimension (SQD) Variables

An attempt has been made to determine the Service Quality Dimension of CMRL services. To measure the same 25 aspects relating to Service Quality were identified. To identify the significance and importance of hidden dimensions factor analysis technique were used. The Extraction methods of Principal Component Analysis and Rotation Method of Varimax with Kaiser Normalization have been applied and the outcomes are shown in Table 1.1 to 1.2

Table 1.1 Showing Descriptive Statistics of Service Quality Dimension (SQD)

S.No	Service Quality Dimension	Mean	Std. Deviation	Communalities
1.	Safety Screening	4.38	.708	.468
2.	Security	4.36	.577	.322
3.	Parking Facilities	4.44	.582	.346
4.	Store value Card	4.01	.758	.724
5.	Tourist Card	3.86	.818	.672
6.	Ticket fare	3.51	.904	.488
7.	Lighting and A/C	4.68	.548	.392
8.	Travelling Time	4.73	.493	.656
9.	Cleanliness on platform	4.34	1.223	.440
10.	Cleanliness on Toilets	4.51	.593	.397
11.	Security at Station	4.00	.833	.583
12.	Waiting Room	3.55	.908	.740
13.	Drinking Water Arrangement	3.78	1.012	.727
14.	Pay and Use Toilets	3.92	.845	.605
15.	ATM facilities	3.40	1.168	.749
16.	Refreshment /Food/Plazas	3.28	1.213	.735
17.	Cleanliness and Security in train	4.76	.479	.580
18.	Proper Maintenance of Coaches or Compartments	3.99	1.262	.450
19.	Availability of Ladies Coaches	4.06	1.137	.457
20.	Facilities for Physically Challenged persons	4.62	.522	.477
21.	Train Information	4.35	.970	.318
22.	Train Delay	4.35	.715	.172
23.	Cancellations of Trains	4.12	.808	.391
24.	Underground Mobile Network Problems	2.93	1.055	.409
25.	Mobile Charging Facilities	3.12	1.207	.611

Table 1.1 shows an average summary of Service Quality Dimensions(SQD) variables, mean values are higher than the there standard deviation, The Communalities values range between 0.322 to 0.740, indicating factor analysis can be applied to 25 aspects of service quality dimensions.

Table 1.2: Showing KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.521
Bartlett's Test of Sphericity	Approx. Chi-Square	3338.699
	Df	300
	P-value	.000

Table 1.2 reveals that KMO – MSA test and Bartlett's Test of Sphericity indicate that the factor analysis can be applied to 24 SQD Variables.

Table 1.3 Showing Total Variance Explained

Component	Rotation Sums of Squared Loadings		
	Total	% of Variance	Cumulative %
1	3.504	14.015	14.015
2	2.967	11.866	25.881
3	2.913	11.653	37.534
4	2.725	10.900	48.434

Factor Analysis

Table 1.4 Showing Factor Loading of SQD variables

Factor	SQD variables	Factor Loading
Amenities and Hygiene Factor	ATM facilities	0.740
	Cleanliness and Security in train	0.735
	Refreshment /Food/Plazas	0.720
	Security at Station	0.624
	Cleanliness on Toilets	0.615
Service Establishment Factor	Mobile Charging Facilities	0.771
	Cancellations of Trains	0.617
	Drinking-Water Arrangement	0.535
	Train Information	0.492
	Cleanliness on platform	0.424
	Train Delay	0.405
	Underground Mobile Network Problems	0.403
	Facilities for Physically Challenged persons	0.402
Service Ascent Factor	Store value Card	0.781
	Tourist Card	0.775
	Safety Screening	0.673
	Pay and Use Toilets	0.506
	Security	0.470
Infrastructure Facilities Factor	Travelling Time	0.595
	Ticket fare	0.594
	Waiting Room	0.577
	Parking Facilities	0.569
	Proper Maintenance of Coaches or Compartments	0.564
	Lighting and A/C	0.550
	Availability of Ladies Coaches	0.544

Table 1.3 and 1.4 reveal that 25 SQD variables have been clustered into four independent main factors which together explain 48.434% of the variance in them. The principal factor 1 explains 14.015% variance in the SQD variables

and it contains 5 SQD variables of ATM facilities followed by Cleanliness and Security in train, Refreshment /Food/Plazas, Security at Station and Cleanliness of Toilets in the instruction of standing of their relative correlation with it and therefore, it is characterized as **Amenities and Hygiene Factor (AHF)**.

The important factor enlightens 11.866% of variance in the SQD variables and it made of 8 SQD variables of Mobile Charging Facilities followed by Cancellations of Trains, Drinking Water Arrangement, Train Information, Cleanliness on platform, Train Delay, Underground Mobile Network Problems and Facilities for Physically Challenged persons in the mandate of position of their relative correlation with it and therefore, it is categorized as **Service Establishment Factor (SEF)**.

The third prevailing factor describes 11.653% of variance in the SQD variables and it is made of 5 SQD variables of Store value Card, Tourist Card, Safety Screening, Pay and Use Toilets and Security in the mandate of prominence of their relative correlation with it and therefore, it is named as **Service Ascent Factor (SAF)**.

The fourth leading factor clarifies 10.900% of variance in the SQD variables and it is made of Travelling Time followed by Ticket fare, Waiting Room, Parking Facilities, Proper Maintenance of Coaches or Compartments, Lighting and A/C and Lighting and A/C in the direction of rank of their relative correlation with it and therefore, it is considered as **Infrastructure Facilities Factor (IFF)**.

Dominant Dimensions of Service Quality Dimension(SQD) Variables

- 25 SQD variables have been clustered into four independent dominant factors which together explain 48.434% of the variance.
- The 14.015% of the variance in the SQD variables has been entitled as **Amenities and Hygiene Factor (AHF)**.
- The important factor describes 11.866% of the variance in the SQD variables and has been named as **Service Establishment Factor (SEF)**.
- 11.653% of the variance in the SQD variables has been named as **Service Ascent Factor (SAF)**.
- The fourth leading factor clarifies 10.900% of the variance in the SQD variables and has been named as **Infrastructure Facilities Factor (IFF)**.

Influence of Personal Characteristic and Service Quality Dimensions Factors on Commuters Satisfaction Aspects

The current study tries to interrogate the influence of personal profile and Service Quality Dimension factors on overall Commuters Satisfaction Aspects. The Multiple Regression technique uses to see the influence of independent variables on dependent variables and the results are shown in below tables.

Table 1.5: Model Summary

R	R Square	Adjusted R Square	Std. Error of the Estimate
0.611	0.374	0.359	4.23398

Table 1.6: ANOVA of Influence of Personal Profile and Service Quality Dimensions factors on Commuters Satisfaction Aspects

	Sum of Squares	df	Mean Square	F	Sig.
Regression	2290.341	5	458.068	25.552	0.000
Residual	3836.290	214	17.927		
Total	6126.632	219			

Table 1.7: Influence of Personal profile and Service Quality Dimensions factors on Commuters Satisfaction Aspects

	Unstandardized Coefficients		Standardized Coefficients	t	P value
	B	Std. Error	Beta		
(Constant)	36.321	4.773		7.610	0.000
SEF	0.465	0.082	0.347	5.656	0.000
Locality	-3.852	0.675	-0.318	-5.705	0.000
IFF	0.580	0.169	0.210	3.439	0.001
Age	1.467	0.430	0.242	3.414	0.001
Monthly Income	-0.679	0.256	-0.190	-2.649	0.009

Table 1.5 to 1.7 shows that the model has the goodness of fit for multiple regression analysis, a linear combination of a personal profile and SQD factors scores significantly related to total CSA, $F(5,214) = 25.552$, $P < 0.001$. The multiple correlation coefficient is 0.611 indicating that approximately 34.7% of the variance of the CSA variables explained by these items. The overall CSA can be accounted for by the linear combination of SQD factors and Personal profile scores. Among personal profile Locality of the commuters and Monthly income significantly and negatively influencing overall commuters satisfaction while Age of the commuters significantly and positively influencing commuters satisfaction. Among SQD factors Service Enhancement factor and Infrastructure, Facilities factor positively influencing the overall commuters satisfaction.

Table 1.8: No Significance Influence of Personal Profile and Service Quality Dimensions factors on Commuters Satisfaction Aspects

	Beta In	t	Sig.	Partial Correlation	Collinearity Statistics
					Tolerance
AHF	.085 ^f	1.349	.179	.092	.731
SAF	.079 ^f	1.316	.189	.090	.819
Gender	-.050 ^f	-.851	.396	-.058	.863
EQ	-.087 ^f	-1.433	.153	-.098	.795
Occupation	.139 ^f	1.829	.069	.124	.498
Marital Status	-.149 ^f	-1.728	.085	-.118	.389
Type of Family	.076 ^f	1.303	.194	.089	.854

Table 1.8 shows there is no significance of the influence of AHF followed by SAF, Gender profile, Educational Qualification(EQ), Occupation, Marital Status and Type of Family on overall Commuters Satisfaction.

Table 1.9: Descriptive Statistics of Total Commuters Satisfaction Aspects

Descriptive Statistics	Values
Mean	62.140
Median	63.000
Mode	64.00
Std. Deviation	5.289
Variance	27.975
Skewness	-.738

Std. Error of Skewness		.164
Kurtosis		.482
Std. Error of Kurtosis		.327
Range		30.00
Minimum		40.00
Maximum		70.00
Percentiles	25	55.0000
	50	60.0000
	75	65.0000

Table 1.9 reveals that out of the maximum value of 70(14X5) in Commuters Satisfaction Aspects (CAS) variables, its values range from 40 to 70 and its median and mode value are 63 and 64 respectively. The mean value of 62.140 is a strong measure of Commuters Satisfaction Aspects as the standard deviation is lower. The distribution of CSA is positively skewed.

SUGGESTIONS

- Token Arrangement (Counter) needs upgrading since there are many issuing counter present but in only one counter the tickets have been issued this lead to commuters dissatisfaction by standing in a queue
- Need to recruit more employees at Chennai Metro Rail Limited for providing services.
- Parking card can be given to regular users of Chennai Metro Rail Limited at a nominal rate.
- Commuter's needs a Wi-Fi connectivity facility at the Metro stations.
- Provide reserved spaces for wheelchairs for differently-abled commuters in metro rail stations.
- The metro authority should emphasize maintaining lift and escalators, private atmosphere, reasonable cost since they are stirring factors in influencing the commuter's to avail Chennai Metro Rail Limited services.

CONCLUSIONS

CMRL, a reliable transportation system helping the city of Chennai with a network consist of three colour line covering a length of 45 kilometres and the aim of the venture is to offer fast, reliable, appropriate, well-organized, contemporary and cost-effective approach of public transport. The present study aimed at measuring the level of fulfilment of passengers towards services provided by CMRL, various factors contributing to commuters' satisfaction. The results reveal the majority of the respondents are young females with PG qualifications earning a monthly income of Rs 25,000 and resider in the urban locality. The 25 service quality dimensions has been factorised into four independent factors namely Amenities and Hygiene factors, Service establishment factor, Service Ascent factor and Infrastructure facilities factor. Based on mean values behaviours of sanitary worker and significance of deviations has been found between/among family group, locality, Age group, educational qualification group, occupation group, income group, on each factor of service quality dimension, locality, monthly income, age, service enhancement factor and infrastructure facilities factor. There is the significance of the association between profile groups in commuters' satisfaction group. More study needs to be carried to determine other dimensions of commuters' satisfaction.

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